

IN THE CLAIMS:

Please AMEND the claims and ADD new claims as follows:

1. (CURRENTLY AMENDED) An optical device, comprising:
a substrate having a first surface and a second surface, wherein the first surface of the substrate is opposite the second surface of the substrate;
a light input portion on the first surface of the substrate;
a first multi-layer film formed on the first surface of the substrate;
a fixing material having substantially a same thermal expansion coefficient as the substrate and fixed to the first multi-layer film ~~and the first surface;~~
a second multi-layer film formed on the second surface of the substrate; and
a stress correction film formed on the second multi-layer film, correcting distortion of the substrate due to a difference in stress between the first and second multi-layer films formed on the first and second surfaces, respectively,

wherein light enters the substrate through the light input portion to be reflected between the first and second multi-layer films, and the fixing material does not block the light from entering the substrate through the light input portion.

2. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said stress correction film is transparent to light with a specific wavelength, and the optical film thickness is an integral multiple of one half of the specific wavelength.

3. (ORIGINAL) The optical device according to claim 1, wherein said stress correction film is made of SiO₂.

4. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said stress correction film maintains profile irregularity of the substrate at a value of one wavelength or less.

5. (CURRENTLY AMENDED) The optical device according to claim 1, comprising:
a VIPA optical element further comprising:
said substrate being a plate transparent to light with a specific wavelength;
said first multi-layer film;
said light input portion;

said second multi-layer film; and
said stress correction film maintaining the VIPA optical element substantially planar, and
a mirror reflecting and returning the spectral components of light separated by the VIPA optical element to the VIPA optical element, wherein
a dispersion compensator is realized by using said VIPA optical element and said mirror.

6. (CANCELLED)

7. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said fixing material is made of transparent glass or semiconductor.

8. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said fixing material is made of opaque metal or ceramic.

9. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said fixing material is made of copper-tungsten alloy, Kovar alloy, alumina, or BeO.

10. (CURRENTLY AMENDED) The optical device according to claim 1, wherein said ~~substrate is fixed on said fixing material~~ is fixed to the first multi-layer film by organic adhesives, metallic soldering, or low melting point glass.

11. (CURRENTLY AMENDED) The optical device according to claim 1, wherein said ~~substrate is fixed on said fixing material~~ is fixed to the first multi-layer film at a plurality of points.

12. (PREVIOUSLY PRESENTED) The optical device according to claim 1, wherein said substrate is optically connected with said fixing material.

13. (PREVIOUSLY PRESENTED) The optical device according to claim 12, wherein the material of the optically connected surfaces is made of SiO₂.

14. (CURRENTLY AMENDED) A method ~~for correcting distortion in an optical element, wherein the optical element includes a substrate having a first surface and a second surface opposite the first surface, a first multi-layer film, a second multi-layer film, and a stress~~

~~correction film, said method comprising:~~

~~_____ providing a substrate having first and second surfaces opposite to each other, with a light input portion on the first surface;~~

~~fixing said substrate via a portion of the first surface to a fixing material having substantially the same thermal expansion coefficient as said substrate;~~

~~forming a first multi-layer film on a portion of the first surface of the substrate;~~

~~fixing a fixing material having substantially a same thermal expansion coefficient as the substrate to the first multi-layer film;~~

~~forming a second multi-layer film on the second surface of the substrate opposite the first surface of the substrate; and~~

~~forming a stress correction film on the second multi-layer film, correcting distortion of the substrate due to a difference in stress between the first and second multi-layer films, formed on the first and second surfaces, respectively~~

~~wherein light enters the substrate through the light input portion to be reflected between the first and second multi-layer films, and the fixing material does not block the light from entering the substrate through the light input portion.~~

15. (CURRENTLY AMENDED) An optical device, comprising:

a substrate having a first surface and a second surface that is opposite the first surface, with a light input portion on the first surface, ~~wherein said substrate is fixed via a portion of the first surface to a fixing material having substantially the same thermal expansion coefficient as the substrate;~~

a first reflecting film formed on a portion of the first surface of the substrate;

a second reflecting film formed on the second surface of the substrate;

a fixing material having substantially a same thermal expansion coefficient as the substrate and being fixed to the first reflecting film; and

a stress correction film formed on the second ~~multi-layer~~reflecting film, correcting distortion of the substrate due to a difference in stress between the first and second reflecting films, ~~formed on the first and second surfaces, respectively~~

wherein light enters the substrate through the light input portion to be reflected between the first and second films, and the fixing material does not block the light from entering the substrate through the light input portion.

16. (NEW) An optical device according to claim 1, wherein light input portion is

positioned with respect to the fixing material so that the light input portion projects from the fixing material, so that the fixing material thereby does not block the light from entering the substrate through the light input portion.

17. (NEW) A method according to claim 14, wherein light input portion is positioned with respect to the fixing material so that the light input portion projects from the fixing material, so that the fixing material thereby does not block the light from entering the substrate through the light input portion.

18. (NEW) An apparatus comprising:
a virtually-imaged phased array (VIPA) comprising
a substrate having first and second surfaces opposite to each other,
a light input portion on the first surface of the substrate,
a first reflective film formed on the first surface of the substrate, and
a second reflective film formed on the second surface of the substrate, wherein
light enters the VIPA through the light input portion and is then reflected between the first
and second reflective films; and
a fixing material having substantially a same thermal expansion coefficient as the
substrate, wherein the fixing material is fixed to the first reflective film and does not block the
light from entering the VIPA through the light input portion.

19. (NEW) An apparatus according to claim 18, wherein the VIPA further comprising:
a stress correction film formed on the second reflective film, and correcting distortion of
the substrate due to a difference in stress between the first and second reflective films.

20. (NEW) An apparatus according to claim 18, wherein light input portion is
positioned with respect to the fixing material so that the light input portion projects from the fixing
material, so that the fixing material thereby does not block the light from entering the substrate
through the light input portion.

21. (NEW) An apparatus according to claim 19, wherein light input portion is
positioned with respect to the fixing material so that the light input portion projects from the fixing
material, so that the fixing material thereby does not block the light from entering the substrate
through the light input portion.

22. (NEW) An apparatus comprising:

a virtually-imaged phased array (VIPA) comprising:

a substrate having first and second sides opposite to each other, and

a light input portion, on the first side of the VIPA, through which light enters the VIPA; and

a fixing material having substantially a same thermal expansion coefficient as the substrate, wherein the fixing material is fixed to the first side of the VIPA and does not block the light from entering the VIPA through the light input portion.

23. (NEW) An apparatus according to claim 22, wherein light input portion is positioned with respect to the fixing material so that the light input portion projects from the fixing material, so that the fixing material thereby does not block the light from entering the substrate through the light input portion.

24. (NEW) An apparatus comprising:

a virtually-imaged phased array (VIPA) comprising:

a substrate having first and second sides opposite to each other, and

a light input portion, on the first side of the VIPA, through which light enters the VIPA;

a fixing material having substantially a same thermal expansion coefficient as the substrate; and

means for fixing the fixing material to the first side of the VIPA and in a positioned with respect to the light input portion so that the light entering the VIPA through the light input portion is not blocked by the fixing material.